

SEQUENCE LISTING

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C1 (1) GENERAL INFORMATION:

(i) APPLICANT: JOHNSON, L.  
(ii) TITLE OF INVENTION: Human Murine Chimeric Antibodies Against  
Respiratory Syncytical Virus

(iii) NUMBER OF SEQUENCES: 49

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: CARELLA, BYRNE, BAIN, GILFILLAN, CECCHI,  
STEWART & OLSTEIN

(B) STREET: 6 BECKER FARM ROAD

(C) CITY: ROSELAND

(D) STATE: NEW JERSEY

(E) COUNTRY: USA

(F) ZIP: 07068

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: 3.5 INCH DISKETTE

(B) COMPUTER: P160

(C) OPERATING SYSTEM: Windows95

(D) SOFTWARE: MS Word 97

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: 09/158,120

(B) FILING DATE: September 21, 1998

(C) CLASSIFICATION: 424

(vii) PRIOR APPLICATION DATA

(A) APPLICATION NUMBER: 08/290,592

(B) FILING DATE: August 15, 1994

(A) APPLICATION NUMBER: 07/813,372

(B) FILING DATE: December 23, 1991

(viii) ATTORNEY/AGENT INFORMATION:

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(C) REFERENCE/DOCKET NUMBER: 469201-367

(ix) TELECOMMUNICATION INFORMATION:

(A) TELEPHONE: 973-994-1700

(B) TELEFAX: 973-994-1744

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 27 BASE PAIRS

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

AGCGGATCCA GGGGCCAGTG GATAGAC

27

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 17 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

TGGATGGTGG GAAGATG 17

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 15 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

GGCCAGTGGA TAGAC15

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 16 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE  
(D) TOPOLOGY: LINEAR  
(ii) MOLECULE TYPE: Oligonucleotide  
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

TACAGTTGGT GCAGCA16

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS  
(A) LENGTH: 24 NUCLEOTIDES  
(B) TYPE: NUCLEIC ACID  
(C) STRANDEDNESS: SINGLE  
(D) TOPOLOGY: LINEAR  
(ii) MOLECULE TYPE: Oligonucleotide  
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

GATGGATCCA GTTGGTGCAG CATC24

C<sub>1</sub>  
(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS  
(A) LENGTH: 30 NUCLEOTIDES  
(B) TYPE: NUCLEIC ACID  
(C) STRANDEDNESS: SINGLE  
(D) TOPOLOGY: LINEAR  
(ii) MOLECULE TYPE: Oligonucleotide  
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

CACGTCGACA TTCAGCTGAC CCAGTCTCCA

30

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS  
(A) LENGTH: 30 NUCLEOTIDES  
(B) TYPE: NUCLEIC ACID  
(C) STRANDEDNESS: SINGLE  
(D) TOPOLOGY: LINEAR  
(ii) MOLECULE TYPE: Oligonucleotide  
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

CGGAATTCAG GTNNANCTGC AGNAGTCWGG

30

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 28 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

CCCAAGCTTG GTCCCCCTC CGAACGTG

28

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 39 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

GGCGTCGACT CACCATGGAC ATGAGGGTCC YCGCTCAGC

39

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 57 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

GTCACCATCA CTTGCAAGTG CCAGCTGAGT GTAGGTTACA TGCACTGGTA CCAGCAG

57

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 54 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

GCAACTTATT ACTGCTTTCA GGGGAGTGGG TACCCATTCA CGTTCGGAGG GGGG

54

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 32 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

GTGACCAACA TGGACCCTGC TGATACTGCC AC

32

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 29 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

CCATGTTGGT CACTTTAAGG ACCACCTGG

29

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 37 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

CCAGTTTACT AGTGT CATAG ATCAGGAGCT TAGGGGC

37

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 37 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

TGACACTAGT AAAC TGGCTT CTGGGGTCCC ATCAAGG

37

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 97 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly

5

10

15

Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Asn

20

25

30

Ser Tyr Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu

35	40	45
Glu Trp Met Gly Ile Ile Asn Pro Ser Gly Gly Ser Thr Ser Tyr		
50	55	60
Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser		
65	70	75
Thr Ser Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp		
80	85	90
Thr Ala Val Tyr Tyr Cys Ala		
95		

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 117 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly		
5	10	15
Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Asn Ile Lys		
20	25	30
Asp Tyr Tyr Ile Tyr Trp Val Arg Gln Ala Pro Gly Gln Gly Leu		
35	40	45
Glu Trp Ile Gly Trp Ile Asp Pro Glu Asn Gly Asn Thr Val Phe		
50	55	60
Asp Pro Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser		
65	70	75

Thr Ser Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp  
80 85 90

Thr Ala Val Tyr Tyr Cys Ala Tyr Tyr Gly Thr Ser Ser Phe Asp  
95 100 105

Phe Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser  
110 115

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 117 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Pro Gly  
5 10 15

Ala Leu Val Lys Leu Ser Cys Lys Ala Ser Gly Phe Asn Ile Lys  
20 25 30

Asp Tyr Tyr Ile Tyr Trp Val Lys Gln Arg Pro Glu Gln Gly Leu  
35 40 45

Glu Trp Ile Gly Trp Ile Asp Pro Glu Asn Gly Asn Thr Val Phe  
50 55 60

Asp Pro Lys Phe Gln Gly Lys Ala Ser Ile Thr Ser Asp Thr Ser  
65 70 75

Ser Asn Thr Ala Tyr Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp  
80 85 90



Thr Ala Val Tyr Tyr Cys Ala Tyr Tyr Gly Thr Ser Ser Phe Asp  
 95 100 105

Phe Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser  
 110 115

(2) INFORMATION FOR SEQ ID NO:19

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 95 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val  
 5 10 15

Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser  
 20 25 30

Ser Trp Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys  
 35 40 45

Leu Leu Ile Tyr Asp Ala Ser Ser Leu Glu Ser Gly Val Pro Ser  
 50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile  
 65 70 75

Ser Ser Leu Gln Pro Asp Asp Phe Ala Thr Tyr Tyr Cys Gln Gln  
 80 85 90

Tyr Asn Ser Tyr Ser  
 95

(2) INFORMATION FOR SEQ ID NO:20

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 107 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val  
5 10 15

Gly Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Ile Asn  
20 25 30

Arg Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys  
35 40 45

Leu Leu Ile Tyr Arg Ala Asn Arg Leu Val Asp Gly Val Pro Ser  
50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile  
65 70 75

Ser Ser Leu Gln Pro Asp Asp Phe Ala Thr Tyr Tyr Cys Leu Gln  
80 85 90

Phe His Glu Phe Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu  
95 100 105

Ile Lys

(2) INFORMATION FOR SEQ ID NO:21

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 107 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Asp Ile Lys Met Thr Gln Ser Pro Ser Ser Met Tyr Val Ser Leu  
5 10 15

Gly Glu Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Ile Asn  
20 25 30

Arg Tyr Leu Asn Trp Phe Gln Gln Lys Pro Gly Lys Ser Pro Lys  
35 40 45

Thr Leu Ile His Arg Ala Asn Arg Leu Val Asp Gly Val Pro Ser  
50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Gln Glu Tyr Ser Leu Thr Ile  
65 70 75

C Ser Ser Leu Glu Phe Glu Asp Met Gly Ile Tyr Tyr Cys Leu Gln  
80 85 90

Phe His Glu Phe Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu  
95 100 105

Ile Lys

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 117 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

CCATGGACTG GACCTGGAGG GTCTTCTGCT TGCTGGCTGT AGCACCAGGT GCCCACTCCC

60

AGGTGCAGCT GGTGCAGTCT GGAGCTGAGG TGAAGAAGCC TGGAGCCTCA GTGAAGG  
117

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 120 NUCLEOTIDES
- (B) TYPE: NUCLEIC ACID
- (C) STRANDEDNESS: SINGLE
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

CACTTCTTCG GACCTCGGAG TCACTTCCAA AGGACGTTCC GTAGACCTAA GTTGTAATTC  
60  
CTGATGATGT AAATGACCCA CGCTGTCCGA GGACCTGTTC CCGAGCTCAC CTACCCAACC  
120

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 119 NUCLEOTIDES
- (B) TYPE: NUCLEIC ACID
- (C) STRANDEDNESS: SINGLE
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

GGGCTCGAGT GGATGGGTTG GATTGACCCT GAGAATGGTA ATACTGTGTT TGACCGAAGT  
60  
TCCAGGGCAG AGTCACCATG ACCAGGGACA CGTCCACGAG CACAGTCTAC ATGGAGCTG  
119

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 137 NUCLEOTIDES
- (B) TYPE: NUCLEIC ACID
- (C) STRANDEDNESS: SINGLE
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

GGTGCTCGTG TCAGATGTAC CTCGACTCGT CGGACTCTAG ACTCCTGTGC CGGCACATAA  
60  
TGACACGCAT GATGCCATGT TCGAGGAAAC TGAAGACCCC GGTTCCTGG TGAGAGTGTC  
120  
ACTCGAGTAT TCCTAGG  
137

(2) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 106 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

C<sub>1</sub>  
CCATGGACAT GAGGGTCCCC GCTCAGCTCC TGGGGCTCCT GCTGCTCTGG CTCCCAGGTG  
60  
CCAAATGTGA TATCCAGATG ACCCAGTCTC CTTCCACCCT GTCTGC  
106

(2) INFORMATION FOR SEQ ID NO:27:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 107 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

GTCAGAGGAA GGTGGGACAG ACGTAGACAT CCTCTGTCTC AGTGGTAGTG AACGTTCCGC  
60  
TCAGTCCTGT AATTATCCAT AAATTTGACC ATGGTCGTCT TTGGGCC  
107

(2) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 107 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

GAAAGCCCCT AAGCTCCTGA TCTATCGTGC AAACAGATTG GTAGATGGGG TCCCATCAAG

60

GTTCAGCGGC AGTGGATCTG GGACAGAATT CACTCTCACC ATCAGCA

107

(2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 116 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

GTCTTAAGTG AGAGTGGTAG TCGTCGGACG TCGGACTACT AAAACGTTGA ATAATGACGG

60

ATGTCAAAGT ACTCAAAGGC ATGTGCAAGC CTCCCCCTG GTTCGAACTT TATTTT

116

(2) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 123 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr

5

10

15

Gln Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser  
20 25 30

Ser Ser Gly Met Cys Val Gly Trp Ile Arg Gln Pro Pro Gly Lys  
35 40 45

Ala Leu Glu Trp Leu Ala Asp Ile Glu Trp Asp Asp Asp Lys Asp  
50 55 60

Tyr Asn Thr Ser Leu Asp Thr Arg Leu Thr Ile Ser Lys Asp Thr  
65 70 75

Ser Lys Asn Gln Val Val Leu Thr Val Thr Asn Met Asp Pro Ala  
80 85 90

Asp Thr Ala Thr Tyr Tyr Cys Ala Arg Ile Thr Val Ile Pro Ala  
95 100 105

Pro Ala Gly Tyr Met Asp Val Trp Gly Arg Gly Thr Pro Val Thr  
110 115 120

Val Ser Ser

(2) INFORMATION FOR SEQ ID NO:31:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 120 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr  
5 10 15

Gln Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser

	20	25	30
Thr Ser Gly Met Ser Val Gly Trp Ile Arg Gln Pro Ser Gly Lys			
	35	40	45
Ala Leu Glu Trp Leu Ala Asp Ile Trp Trp Asp Asp Lys Lys Asp			
	50	55	60
Tyr Asn Pro Ser Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr			
	65	70	75
Ser Lys Asn Gln Val Val Leu Lys Val Thr Asn Met Asp Pro Ala			
	80	85	90
Asp Thr Ala Thr Tyr Tyr Cys Ala Arg Ser Met Ile Thr Asn Trp			
	95	100	105
Tyr Phe Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser			
	110	115	120

(2) INFORMATION FOR SEQ ID NO:32:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 120 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Gln Val Glu Leu Gln Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser			
	5	10	15
Gln Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser			
	20	25	30
Thr Ser Gly Met Ser Val Gly Trp Ile Arg Gln Pro Ser Gly Glu			
	35	40	45



Gly Leu Glu Trp Leu Ala Asp Ile Trp Trp Asp Asp Lys Lys Asp  
50 55 60

Tyr Asn Pro Ser Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr  
65 70 75

Ser Ser Asn Gln Val Phe Leu Lys Ile Thr Gly Val Asp Thr Ala  
80 85 90

Asp Thr Ala Thr Tyr Tyr Cys Ala Arg Ser Met Ile Thr Asn Trp  
95 100 105

Tyr Phe Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser  
110 115 120

(2) INFORMATION FOR SEQ ID NO:33:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 95 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val  
5 10 15

Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser  
20 25 30

Ser Trp Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys  
35 40 45

Leu Leu Ile Tyr Asp Ala Ser Ser Leu Glu Ser Gly Val Pro Ser  
50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile  
65 70 75

Ser Ser Leu Gln Pro Asp Asp Phe Ala Thr Tyr Tyr Cys Gln Gln  
80 85 90

Tyr Asn Ser Tyr Ser  
95

(2) INFORMATION FOR SEQ ID NO:34:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 106 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val  
5 10 15

Gly Asp Arg Val Thr Ile Thr Cys Lys Cys Gln Leu Ser Val Gly  
20 25 30

Tyr Met His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu  
35 40 45

Trp Ile Tyr Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ser Arg  
50 55 60

Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser  
65 70 75

Ser Leu Gln Pro Asp Asp Phe Ala Thr Tyr Tyr Cys Phe Gln Gly  
80 85 90

Ser Gly Tyr Pro Phe Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile

95

100

105

Lys

## (2) INFORMATION FOR SEQ ID NO:35:

## (i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 106 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

## (ii) MOLECULE TYPE: PROTEIN

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Asp Ile Gln Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro

5

10

15

Gly Glu Lys Val Thr Met Thr Cys Ser Ala Ser Ser Ser Val Gly

20

25

30

Tyr Met His Trp Tyr Gln Gln Lys Ser Ser Thr Ser Pro Lys Leu

35

40

45

Trp Ile Tyr Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Gly Arg

50

55

60

Phe Ser Gly Ser Gly Ser Gly Asn Ser Tyr Ser Leu Thr Ile Ser

65

70

75

Ser Ile Gln Ala Glu Asp Val Ala Thr Tyr Tyr Cys Phe Gln Gly

80

85

90

Ser Gly Tyr Pro Phe Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile

95

100

105

Lys

## (2) INFORMATION FOR SEQ ID NO:36:

## (i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 63 NUCLEOTIDES

- (B) TYPE: NUCLEIC ACID
- (C) STRANDEDNESS: SINGLE
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

GCCTGAGCTC ACGGTGACCG TGGTCCCGCC GCCCCAGACA TCGAAGTAGC AGTTCGTGAT CAT

63

(2) INFORMATION FOR SEQ ID NO:37:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 79 NUCLEOTIDES
- (B) TYPE: NUCLEIC ACID
- (C) STRANDEDNESS: SINGLE
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

GTTGGTGACT TTAAGGACCA CCTGGTTTTT GGAGGTATCC TTGGAGATTG TGAGCCGGCT

60

CTTCAGCCAT GGATTATAG

79

(2) INFORMATION FOR SEQ ID NO:38:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 89 NUCLEOTIDES
- (B) TYPE: NUCLEIC ACID
- (C) STRANDEDNESS: SINGLE
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

GCGCCTTCCC TGGGGGCTGA CGAATCCAGC CTACACTCAT ACCAGAAGTG CTCAGTGAAA

60

ACCCAGAGAA GGTGGAGGTC AGTGTGAGG

89

(2) INFORMATION FOR SEQ ID NO:39:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 70 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

CCAGGTCACC TTAAGGGAGT CTGGTCCTGC GCTGGTGAAA CCCACACAGA CCCTCACACT

60

GACCTGCACC

70

(2) INFORMATION FOR SEQ ID NO:40:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 78 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

CAGCCCCCAG GGAAGGCCCT GGAGTCGCTT GCAGACATTT GGTGGGATGA CAAAAGGAC

60

TATAATCCAT CCCTGAAG

78

(2) INFORMATION FOR SEQ ID NO:41:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 64 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

GGTCCTTAAA GTGACCAACA TGGACCCTGC TGATACTGCC ACTTACTACT GTGCTCGGTC

60

TATG

64

(2) INFORMATION FOR SEQ ID NO:42:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 72 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

GGCGTCGACT CACCATGGAC TGGACCTGGA GGGTCTTCTG CTTGCTGGCT GTAGCACCAG

60

GTGCCCCACTC CC

72

C  
(2) INFORMATION FOR SEQ ID NO:43:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 7 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Thr Ser Gly Met Ser Val Gly

5

(2) INFORMATION FOR SEQ ID NO:44:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 16 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Asp Ile Trp Trp Asp Asp Lys Lys Asp Tyr Asn Pro Ser Leu Lys Ser  
5 10 15

(2) INFORMATION FOR SEQ ID NO:45:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 10 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Ser Met Ile Thr Asn Trp Tyr Phe Asp Val  
5 10

(2) INFORMATION FOR SEQ ID NO:46:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 10 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

Lys Cys Gln Leu Ser Val Gly Tyr Met His  
5 10

(2) INFORMATION FOR SEQ ID NO:47:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 6 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

Thr Ser Lys Leu Ala Ser  
5

(2) INFORMATION FOR SEQ ID NO:48:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 8 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

Phe Gln Gly Ser Gly Tyr Pro Phe

5

(2) INFORMATION FOR SEQ ID NO:49:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 6 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

Ser Val Gly Tyr Met His

5

C,  
could